

## Claims:

1. A live vaccine composition for protecting against plague comprising a live attenuated bacterium that is a serovar of *Salmonella enterica* comprising:

an attenuating mutation in a genetic locus of the chromosome of said bacterium that attenuates virulence of said bacterium and wherein said attenuating mutation is not a single mutation in a gene that encodes a protein that is essential for the synthesis of an aromatic compound and is not a single mutation in a gene for galactose utilization;

a lethal mutation in a genetic locus in the chromosome of said bacterium wherein said lethal mutation prevents expression from said genetic locus of a protein that has an activity that is essential for cell wall synthesis of said bacterium;

an antigen-expressing, multi-copy plasmid comprising:

a nucleotide sequence coding for an immunogenic polypeptide comprising a *Yersinia pestis* V antigen, an immunogenic portion of said V antigen, a *Yersinia pestis* F1 antigen, an immunogenic portion of said F1 antigen, or a combination thereof, wherein said nucleotide sequence is operably linked to a promoter that permits intracellular expression of said immunogenic polypeptide from said plasmid,

a gene encoding a protein that has an activity that is essential for cell wall synthesis, wherein expression of said protein essential for cell wall synthesis complements said lethal mutation in the chromosome of said bacterium and thereby permits growth of said bacterium, and

an origin of replication that permits multiple copies of said plasmid to be maintained in said bacterium,

wherein said live vaccine composition elicits an immune response to one or more *Yersinia pestis* antigen when administered orally to an individual.

2. The live vaccine composition according to Claim 1, wherein said serovar of *S. enterica* is selected from the group consisting of *Salmonella enterica* serovar Typhimurium (*S. typhimurium*), *Salmonella enterica* serovar Typhi (*S. typhi*),

*Salmonella enterica* serovar Paratyphi B (*S. paratyphi* B), *Salmonella enterica* serovar Paratyphi C (*S. paratyphi* C), *Salmonella enterica* serovar Hadar (*S. hadar*), *Salmonella enterica* serovar Enteritidis (*S. enteritidis*), *Salmonella enterica* serovar Kentucky (*S. kentucky*), *Salmonella enterica* serovar Infantis (*S. infantis*), *Salmonella enterica* serovar Pullorum (*S. pullorum*), *Salmonella enterica* serovar Gallinarum (*S. gallinarum*), *Salmonella enterica* serovar Muenchen (*S. muenchen*), *Salmonella enterica* serovar Anatum (*S. anatum*), *Salmonella enterica* serovar Dublin (*S. dublin*), *Salmonella enterica* serovar Derby (*S. derby*), and *Salmonella enterica* serovar Choleraesuis var. kunzendorf.

3. The live vaccine composition according to Claim 2, wherein said serovar of *S. enterica* is *S. enterica* serovar Typhimurium (*S. typhimurium*).
4. The live vaccine composition according to Claim 1, wherein said attenuating mutation is in a genetic locus selected from the group consisting of *phoP*, *phoQ*, *cdt*, *cya*, *crp*, *poxA*, *rpoS*, *htrA*, *nuoG*, *pmi*, *galE*, *pabA*, *pts*, *damA*, *purB*, *gua*, *cadA*, *rfc*, *rfb*, *rfa*, *ompR*, and combinations thereof.
5. The live vaccine composition according to Claim 4, wherein said attenuating mutation is a deletion mutation.
6. The live vaccine composition according to Claim 5, wherein said attenuating mutation is a  $\Delta phoP/Q$  mutation.
7. The live vaccine composition according to Claim 1, wherein said lethal mutation is a deletion in the *asdA* gene ( $\Delta asdA$ ) and said immunogenic polypeptide encoded on said antigen-expressing, multi-copy plasmid is a fusion protein comprising a V antigen or an immunogenic portion thereof, linked to an F1 antigen or an immunogenic portion thereof.
8. The live vaccine composition according to Claim 1, wherein said origin of replication of said multi-copy plasmid is a pUC or pBR322 plasmid origin of replication.

9. The live vaccine composition according to Claim 1 further comprising a physiologically acceptable buffer or saline solution.
10. A live vaccine composition comprising a live attenuated bacterium that is a Typhimurium serovar of *Salmonella enterica* selected from the group consisting of *S. typhimurium* strain M020 (ATCC Accession No. PTA-6406), *S. typhimurium* M022 (ATCC Accession No. PTA-6407), *S. typhimurium* M023 (ATCC Accession No. PTA-6408), *S. typhimurium* M048 (ATCC Accession No. PTA-6409), *S. typhimurium* M049 (ATCC Accession No. PTA-6410), and combinations thereof.
11. A live vaccine composition according to Claim 10 further comprising a physiologically acceptable buffer or saline solution.
12. A method of protecting an individual from plague comprising administering to said individual a live vaccine composition according to any one of Claims 1-11 along the alimentary canal of said individual.
13. The method according to Claim 12, wherein said live vaccine composition is administered to an individual by swallowing from the mouth, by a nasojunal tube, by a gastrostomy tube, or by a suppository.
14. Use of a live vaccine composition according to any of Claims 1-11 to protect an individual against plague.
15. Use of a strain of *Salmonella enterica* serovar Typhimurium in the manufacture of a live vaccine composition to protect against plague, wherein said strain is selected from the group consisting of *S. typhimurium* strain M020 (ATCC Accession No. PTA-6406), *S. typhimurium* M022 (ATCC Accession No. PTA-6407), *S. typhimurium* M023 (ATCC Accession No. PTA-6408), *S. typhimurium* M048 (ATCC Accession No. PTA-6409), *S. typhimurium* M049 (ATCC Accession No. PTA-6410), and combinations thereof.